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Veterinary Notes from Southern Rhodesia.

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In response to the request of the Editorial Committee of the N.V.M.A., which desires to obtain, for the information of readers of its official organ, the *Record*, articles dealing with veterinary conditions in the colonies, it is proposed to contribute, from time to time, notes dealing with the affairs of the profession in this country.

The idea that members of the veterinary profession at home should be brought in touch with their confrères distributed throughout the wide spaces of the Empire, through the medium of the "National," is undoubtedly most admirable and to be encouraged. Although it has been suggested that the gentleman who coined the motto of our profession may have been a humorist, the fact remains that "unity is strength," and any attempt to demonstrate the truth of it in practice is for the common good.

We notice with pleasure that our near neighbours, our confrères in the Kenya Colony, have established a branch of the "National," and have commenced operations in grand style. The report of the proceedings of their first meeting is most interesting and helpful to those who work under similar conditions in other parts of the world and have similar problems to tackle. Their example might well be followed in this colony, where a Southern Rhodesian Veterinary Association has been in existence since 1921, although no wild enthusiasm has been noticeable with regard to its affairs.

In introducing matters of veterinary importance in this country, it may be well to give, first, a short outline of the history of the profession in this, the youngest British Colony. I believe I am right in saying that the Veterinary Department, which is, in fact, the veterinary profession in Southern Rhodesia—there being no practitioners outside the ranks of the Department—owes its origin to Mr. C. E. Gray, M.R.C.V.S., who, at the time of the rinderpest invasion, was called from the ranks of the Post and Telegraphs Department to deal with this and a series of other troubles. Indeed, those early days were strenuous and difficult times for the few veterinarians in the country. Not only rinderpest, but pleuro-pneumonia, and later, East Coast fever, decimated our herds; glanders, epizootic lymphangitis and the dread "horse-sickness" affected our horses and mules, and rabies our dogs. It needed one of the strength of character of that great little man to deal with the situation. To show how well he fought and how successfully he organised the slender forces of the Veterinary Department, rinderpest, pleuro-pneumonia, glanders and rabies have long since been eliminated, and East Coast fever, although still with us, is fast yielding to systematic dipping and other veterinary measures. The record of the veterinary profession in this country is indeed one of which to be proud.

In 1905, Mr. C. E. Gray was appointed Chief Veterinary Officer to the Transvaal, and Mr. J. M. Sinclair, M.R.V.C.S., took over the reins of office. His term of service has been no sinecure. Continually confronted with one difficult problem after another, it needed his genial nature and tact to carry things through. It is betraying no confidence to mention that throughout this colony he is referred to affectionately by all classes of the community as "Jimmy" Sinclair, and it is largely due to that personal touch which he has with the farmers and stockmen of the country, that his period of service has been so successful.

At the present time the Veterinary Department consists of the Chief Veterinary Surgeon, nine professional officers and forty-nine cattle inspectors, to say nothing of clerks and native messengers. In addition, distinct from but co-ordinated with the Veterinary Department, is the Veterinary Research Department, under the supervision of the writer. Both these departments are responsible to the Minister of Agriculture and Lands. The allocation for the first, for the current year, amounts to £57,328 and for the latter, the sum of £6,223. The remuneration and conditions of service of the officers of the two departments must form the subject of some future note.

New Facts Concerning the Fat-Soluble Vitamins.*

By J. C. Drummond, D.Sc., F.I.C.

Considerable progress in the study of the fat-soluble vitamins has been made since McCollum and Osborne and Mendel in 1913 first observed the marked influence on growth which certain animal fats exhibit in contrast to the inactivity of the majority of vegetable oils.

For a number of years it was considered that this physiological action of animal fats was due to the presence of a substance to which the name "fat-soluble A" was given. It was demonstrated quite clearly by extensive experiments in America and Great Britain that this substance, whatever its nature, is essential for the growth and well-being of young animals, but it was not until E. Mellanby carried out his well-known researches on the causation of rickets that the influence of certain foodstuffs in facilitating the deposition of lime in developing bone was traced to a dietary factor of the same type.

* Reprinted from the April, 1926, number of the *Proceedings of the Royal Society of Medicine* (Section of Comparative Medicine.)

The Ætiology of Rickets.

It will be remembered that at the time Mellanby published his researches there were two conflicting schools of thought regarding the ætiology of rickets. On the one hand a considerable number of authorities regarded the disease as being primarily due to defective hygienic surroundings, in particular lack of sunshine and exercise, whilst on the other, certain observers were inclined to regard it as due to defective diet. The experiments of Mellanby made it clear that rickets can be produced at will in experimental animals by depriving them of a dietary constituent similar, as regards its distribution in natural foodstuffs and its general properties, to the vitamin that had been discovered by the American investigators in 1913.

Mellanby was careful not to assume the identity of the two factors, and for a period there was some confusion in the minds of scientists as to whether the growth-promoting properties and antirachitic properties of a foodstuff such as cod-liver oil were due to one or more than one factor.

We owe it to the researches of McCollum at Johns Hopkins University, Baltimore, that a clear differentiation between the substances responsible for these two effects was made. McCollum demonstrated that the rate of destruction of the growth-promoting and antirachitic potency of cod-liver oil were destroyed at very different rates by subjecting the oil to oxidation. Furthermore, he ascertained that certain natural foodstuffs may show powerful activity in preventing rickets without any marked effect on growth, or vice versa. It appeared very probable, therefore, that at least two substances of the fat-soluble vitamin type occur in cod-liver oil, and for purposes of classification these are to-day termed vitamin A and vitamin D, the former term being applied to the substance more particularly affecting growth, and the latter referring to the factor playing a part in the deposition of lime in bones.

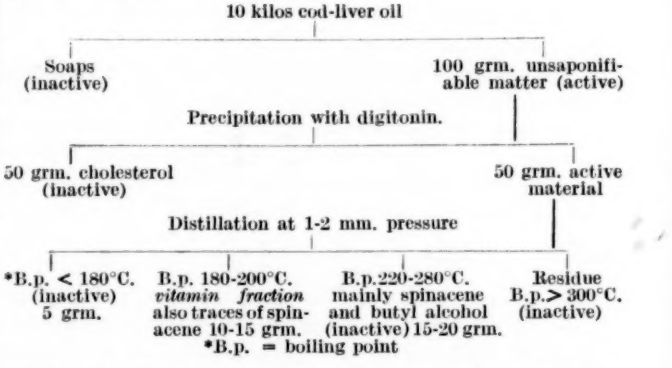
A New Fat-Soluble Vitamin.

Before passing on to consider in detail recent investigations regarding these two interesting subjects, I should like to draw attention to the important researches by Professor H. E. Evans, of California, which have proved the existence of a third vitamin of the fat-soluble class playing an extremely important part in reproduction. As yet information concerning the chemical nature of this substance is meagre, but in my laboratory we have satisfied ourselves that the factor discovered by Evans is distinct from either vitamin A or D, and we have confirmed his main conclusions regarding its action. This newly-discovered factor is now termed vitamin E. It is, I think, a most interesting fact that the attention of both bio-chemists and physiologists is at the present time being diverted from the true fats themselves, and is being directed to the examination of the small traces of substances which usually accompany the glycerides as they occur naturally.

It will be remembered that the majority of natural oils and fats, such as cod-liver oil, consist of about 99 per cent. true fats—*i.e.*, glycerides—and some 1 per cent. substances which resist the action of potash when fats are broken down into glycerol and soap in the ordinary saponification process. This 1 per cent. is termed the unsaponifiable matter. In the past this fraction has attracted very little notice, and interest has centred entirely round the digestibility and nutritive value of the large proportion of true fats present in the oils. The discovery that the unsaponifiable fraction (if prepared with care so as to prevent secondary changes, in particular oxidation, occurring) contains the whole of the vitamins present in the original oil has, as I say, diverted attention to the examination of this fraction.

The Nature of Vitamin A.

I will first bring to your notice some few details of our own attempts to isolate and to determine the nature of the vitamin A, which appears to be largely responsible for the beneficial influence which cod-liver oil exercises on growth. The unsaponifiable matter prepared from cod-liver oil has been submitted to chemical fractionation according to the scheme given below :—



From this table it will be observed that we have succeeded in separating the active substance from a number of other constituents of unsaponifiable matter, but I regret to say we have not yet achieved the separation of the vitamin A in what can be considered to be the pure condition.

Some of you will recall a statement in the lay press a few weeks ago that the Japanese investigator, Takahashi, had succeeded in isolating vitamin A as a pure compound. We have critically examined his work and have satisfied ourselves that his preparations are not more pure than those which we have obtained. It may be of interest to discuss the rather extraordinary potency of the preparations which have been obtained by this fractionation.

The experimental animals employed in these investigations are usually rats. A rat of 100 grm. body-weight will consume during the day approximately 15 grm. dry weight of food. If this food be deficient in vitamin A the animal will completely fail to grow, and in due course will decline in weight and die. In order to keep the rat alive, to maintain health and to permit a normal rate of growth, it is only

necessary, as we have found, to supplement his deficient diet with an amount of active fraction weighing $\frac{1}{200}$th mgm. You will, I think, agree with me that this dosage is of so small an order as to recall the effective doses of internal secretions and of certain drugs.

I fear I cannot give any clear idea, as yet, of the chemical nature of vitamin A, but the very highly active fractions we have obtained largely consist of unsaturated higher alcohols, containing in their molecules only the elements carbon, hydrogen and oxygen. It is possible that the vitamin is actually one of these alcohols, but until we have prepared it in undeniably pure condition it would be unwise to draw such a conclusion. It will be agreed, at any rate, that we must abandon all ideas of the vitamin being a labile, ill-defined compound, such as we at one time imagined it to be when it is so readily demonstrated that it can survive such drastic chemical treatment as saponification with boiling alkalies and distillation at temperatures over 200°C.

I will not say more about vitamin A beyond mentioning that Dr. O. Rosenheim and I have recently described a simple colour reaction which we believe is caused by it and which is proving of great use in detecting the presence of the active substance. I must now pass on to give a brief review of

RECENT KNOWLEDGE CONCERNING VITAMIN D.

As pointed out above, McCollum's work clearly differentiated vitamin A from vitamin D, but this advance did not at once help to reconcile the two conflicting schools of thought regarding the causation of rickets. The reconciliation seems to-day to have been accomplished, and the story of its achievement is one of the most fascinating presented by recent scientific progress.

In 1919 Huldschinsky observed that children suffering from rickets were rapidly cured on exposure to sunlight, or to the light of lamps which emit rays in the ultra-violet part of the spectrum. This striking observation soon received general confirmation, and some glimpse was then obtained of the line upon which one might correlate the views of the two opposing groups of scientists. But, welcome as some prospect of clearing up this difficult matter was, there still remained the task of determining why rickets could be cured equally well by exposing the patient to ultra-violet light or by administering a substance such as cod-liver oil.

The first clue that led to a solution of this problem was provided by the careful work of the American investigator, Steenbock, who discovered the remarkable fact that a food mixture which, by reason of its deficiency will give rise to rickets in animals, becomes endowed with antirachitic potency after it has been exposed to ultra-violet light. Two possibilities suggested themselves to account for this. On the one hand, it was possible that the treated fats absorbed ultra-violet rays, and that the energy so absorbed was later emitted in the form of secondary radiations, which effected a curative action similar in character to that produced by direct exposure to the primary radiations. On the other hand—and it seemed a more attractive hypothesis—it was possible that the absorption of the short wave-length radiation actually produced in the foodstuffs a substance of the type of antirachitic vitamin D. It was comparatively an easy matter to examine one by one the constituents of the food mixture, and this examination soon revealed that the precursor of the physiologically active substance is present in the oil or fats. The examination of such activated fats revealed that the conference of antirachitic potency could be traced to the action of ultra-violet light on a constituent or constituents of the unsaponifiable fraction. One of the most commonly occurring substances in these unsaponifiable oils and fats is the familiar substance cholesterol—a substance of almost universal distribution in living cells.

Dr. Rosenheim, Mr. T. A. Webster and myself were able to show, simultaneously with Steenbock and Hess in the United States, that cholesterol, or the very closely-related compound, phytosterol, is the parent substance of the antirachitic vitamin. It is possible to take the purest specimens of cholesterol—and it is a substance which can be prepared in a state of considerable purity—to expose it to ultra-violet light for an hour or two under suitable conditions, and to obtain thereby a product showing an extremely powerful antirachitic action. This activated cholesterol, if we may so term it, shows little or no effect on growth, nor does it show other properties of vitamin A, so that it may now be definitely accepted that these two substances A and D are distinct.

As yet the chemical investigation of the substance produced from cholesterol by the action of ultra-violet light has not revealed the chemical nature of the active substance. It should, however, prove possible to obtain a fairly large amount of this material, to fractionate by some such process as I have already described, and then to obtain the antirachitic substance in a pure state and ascertain its nature and properties.

I have presented these questions very much from the biochemical aspect. I have done this because I am in my own researches primarily concerned with the biochemical problem of determining the chemical nature of these remarkable substances and ascertaining their physiological action, and I shall be satisfied if I have made clear the following points.

In the first place, there can be no question, I think, that there has been satisfactory differentiation between these two fat-soluble vitamins A and D, and that both of them appear to be physiologically efficient in amounts so minute compared with the quantities of ordinary foodstuffs that are required by the body, that in looking for parallels one can only call to mind the action of agents such as the secretion of the thyroid gland or of certain drugs. In the second place, I hope that I have dissipated from the minds of any who still retain it the old and erroneous idea that the vitamins are hypothetical substances, or that, if they exist, they are substances of ill-defined character comparable with the enzymes or the toxins.

DISCUSSION.

Dr. M. J. ROWLANDS said he was very pleased to have the opportunity of opening the discussion, as he had watched the experiments of Professor Plimmer on animals with interest and the result of the work at St. Thomas's Hospital. He had also had the pleasure of travelling round England with Professor Drummond when his original work began. He (Dr. Rowlands) had thoroughly investigated the question of vitamins, upon which, commercially, he had spent large sums, and they had yielded a successful return as the result of the knowledge he had gained on the work of both Professor Plimmer and Dr. Drummond.

He wished that Professor Plimmer had discussed the question of intestinal toxæmia in relation to vitamin B a little more fully. It was a well-known fact that beri-beri was not of common occurrence in human beings for the reasons Professor Plimmer had stated, but the question of intestinal toxæmia and deficiency of vitamins was so marked to-day that cognizance of vitamin B in relation to digestion and intestinal toxæmia was of the utmost importance. He was not in any way questioning the accuracy of Professor Plimmer's figures or experiments, as he had shown definitely that the balancing of our diet was most important, and he (Dr. Rowlands) had come to the conclusion that the majority of the troubles of patients were chiefly intestinal in origin, due to a vitamin deficiency.

Dr. W. H. ANDREWS said he did not know to what extent animals living under natural conditions might sometimes be forced to live on a diet which was deficient in vitamins, or if such conditions ever occurred at all, but he thought it unlikely that animals which actually grazed on natural pasture ever suffered seriously in this respect. We had to recognise, however, that most of our domestic animals did not receive a natural diet, and the tendency to keep them on diets which were not altogether natural was increasing.

Of the diseases which were recognised to be due to serious vitamin deficiency, rickets was the only one which (as far as he was aware) was encountered in the domesticated animals. Polyneuritis might occur, of course, in domesticated birds, but in the ordinary domestic mammals we did not meet with anything like polyneuritis, beri-beri or scurvy. For this reason he was particularly interested in Professor Plimmer's account of the effects brought about by a more moderate deficiency of vitamin B.' Such ill-defined disturbances of digestion were, as was known, extremely common in man, and we had plenty of that sort of thing in the domestic animals also.

We did not know much about the vitamin requirements of the domestic herbivora, but it seemed to be difficult to induce in them any well-defined avitaminosis. He had not worked on this subject himself, but he had had the privilege of watching two different series of experiments of this nature.

In the first case, the experiments had been carried out in South Africa by Mr. A. Stead, who was endeavouring to show that the disease "lamziekte" in cattle was the bovine equivalent of beri-beri. "Lamziekte" was not induced, but after a time the cattle developed laminitis.

The second series of experiments had been performed by Sir A. Theiler and his co-workers, and both horses and cattle were fed over prolonged periods of time on diets which were very seriously deficient (as judged by the usual standards) in vitamin B.

Here, again, no well-defined avitaminosis had been induced, but some of these animals also developed laminitis. One could hardly regard laminitis as a form of avitaminosis; it was a condition with which they were all very familiar, and it often arose in animals which were undoubtedly getting ample supplies of all the well-recognised vitamins. For example, he had seen a considerable number of severe cases during the war in horses which were suddenly placed on full rations of wheat; these horses were receiving also generous rations of fresh green food, and there could not have been any vitamin deficiency. We had to assume that the animals which developed laminitis, when given diets which were deficient in vitamin B, were affected by some other factor connected with the food. We recognised that horses, and less commonly cattle also, were more likely to suffer from laminitis when receiving food which was in some way (quite unconnected with its vitamin content) unsuitable, or to which the animals were unaccustomed. This point was well illustrated in the war experience to which he had already referred; all of the horses of a particular force had to be placed on a wheat ration, as oats and maize were not available; the horses which were given large amounts of wheat, without previous preparation, suffered from serious digestive disturbance, and in many cases developed laminitis, but those which received at first only small amounts soon became accustomed to it, and when the amount was gradually increased they could be taught to tolerate, and indeed to thrive on, the full ration.

It certainly seemed that adult cattle and horses required only an extremely small proportion of vitamin B, and he supposed that at present there was no actual proof that they required any at all; the requirements of the young and actively growing animals were, of course, in a different category, but he did not know of any attempts to determine them.

Dr. KINGSTON BARTON asked what was meant by the recommendation of ultra-violet rays and artificial light as a means of curing rickets. Formerly, when he had to treat numerous cases of rickets amongst both the poor and the well-to-do of London, he became convinced that the main factor in the causation of rickets in children consisted chiefly in the wrong diet of suckling children. He fully believed that there was a vitamin factor in this nutritional disorder, but he could not accept the statement that all rickets could be cured by ultra-violet rays and by simply exposing foods and oils to irradiation. The rickets of rats, the animals usually selected for all the experiments, was in his opinion not comparable. For in rats extreme rickets could be produced in a very few weeks when the improper diet was given. It was generally reported that the bony changes seen in rickets were cured whilst the animals were subjected to the light treatment. But all the same, if the wrong diet went on the animals died, so there was no great advantage in "dying cured." In the human subject rickets took quite a number of months to develop even when very inappropriate diet was given, so it was inconceivable that light alone could possibly cure rickets unless there was also the most careful attention given to the dietary, which always depended on the age of

the child thus suffering. Even in this cloudy country he thought there was enough sunshine to cure rickets if only the diet was planned rightly.

Rather than the promulgation of these ideas extremely expensive of artificial lights, he thought that the public should be instructed as to what vegetable or meat food contained the proper amount of vitamins, whether A, B or C.

With regard to intestinal troubles, we had hitherto been told by bacterial experts that they were entirely due to great excess of streptococci, or of the *Bacilli coli*, and that the only remedies of value were vaccines. But in a recent paper by Dr. Lawrence Garrod, in the *St. Bartholomew's Hospital Reports*, 1925, it was stated that a reduction in the carbohydrate intake would very speedily get rid of all the streptococci, and that a diminution in protein diets would lead to an elimination of all the *Bacillus coli* groups from the intestine. But Professor Plimmer had presented an altogether new idea, namely, that the vitamin B was the potent factor in prevention of all these intestinal disorders. This at all events was a more simple explanation, for yeast was a vitamin that could be obtained cheaply. It was interesting to observe for how many years country housewives used to treat members of their households suffering from boils and other suppurations by giving them yeast daily with their food.

Professor DRUMMOND (in reply) said that Miss Chick showed that children can be cured either by exposure to ultra-violet light or by giving them suitable food. One speaker had asked whether he was to understand that vitamin A was actually produced after radiation. Such was not the case. Only the antirachitic vitamin D was produced by exposure of an inactive oil, such as cotton-seed-oil, to the ultra-violet rays.

He said he was himself responsible for a certain amount of the confusion, because we found that cholesterol after irradiation had a stimulating effect on growth.

Eventually the inter-relationship of the two vitamins A and D and their effects on growth were being cleared up and we began to obtain some idea of how they acted. He himself was quite satisfied that there was no question of a production of vitamin A from cholesterol by the action of ultra-violet light.

Tuberculosis Eradication in the United States.

By J. A. KIERNAN, Chief, Tuberculosis Eradication Division, Bureau of Animal Industry, U.S.A.

The following passages occur in a lecture at the U.S. Army Veterinary School, reproduced in the January number of the *Veterinary Bulletin* issued for the Veterinary Corps, Medical Department, U.S. Army :—

I am going to deal more with the campaign that is in operation in the United States, having in mind the total control and eradication of tuberculosis, rather than with the nature of the disease.

One of the main reasons for taking up this work was because of the economical loss due to the disease. You know that we have a meat inspection service in the United States, which conducts inspection in several hundred slaughtering establishments. It was found that the losses caused by the condemnation of hogs and cattle that were tuberculous were mounting rapidly, and that these losses reached millions of dollars annually. In 1916, of the 40,000,000 swine slaughtered in the United States, approximately 10 per cent. were retained on account of tuberculosis. Many of the carcases retained were but slightly affected; probably more than 50 per cent. of the lesions were located in the glands of the throat and neck.

The people, as a whole, and the livestock owners in general, have declared, most emphatically, that tuberculosis shall be suppressed. They have instructed their legislators, State and Federal, to make funds available so that the work may keep pace with the demand, and yet the demand increases and outstrips the organisations built up to carry on the work. The legislatures of more than forty States met during the past winter and increased their appropriations from about $6,000,000 for the payment of indemnity to almost $12,000,000; and yet there are indications now that in a number of the States the appropriations will be inadequate to carry on the work at the present pace for the biennial for which funds were provided. There is no doubt, however, that as long as the work is carried on in a systematic and thorough manner, the people will support it and will find ways and means to keep it going until the disease is entirely under control, if not entirely suppressed.

The great work performed is that of individual effort on the farm by the field veterinarian. His work must be of supreme efficiency in order that the task may be concluded either in an individual herd or in an area representing a township or county. There is, at least to my knowledge, no live stock sanitary work that has ever been performed where so much depends upon the reliability and expertness of the individual veterinarian. The veterinarian performs an inestimable service when he visits the farm for the first time and discusses the subject with the owner, getting him in the attitude of submitting his herd to the test; then applying the test in an approved and scientific manner; exercising rare judgment, as is required in anticipating the result of the test; in having the resolution and courage to pronounce animals, sometimes of great value, as tuberculous; branding them in accordance with the State law, and appraising them in a manner satisfactory to the owner; arranging for their shipment to market, and supervising the cleaning and disinfecting of the premises; assisting the owner in replacing the diseased animals with healthy ones, and in leaving with that owner the courage to go on, to rebuild his herd, and to maintain it in perhaps a more sanitary condition than heretofore maintained. These are the duties that the field veterinarian is called upon to perform. Let me tell you that, in so far as the Bureau is concerned, and I believe that I speak for the States and all others representing the industry, the services of the field veterinarian are highly appreciated. It

is admitted that the appreciation is not recognised as fully in a material way as we should like to have it, but it is hoped that the time is not far distant when an improvement along that line also will be forthcoming.

In the inauguration of this work, the fundamental principle of procedure was co-operation. That spirit has pervaded throughout the eight years the work has been in progress, and is responsible to a large degree for the success with which the work has met. We fully admit the commission of many errors in connection with the campaign, and also the omission of things that could have been introduced earlier, had they been foreseen. Everyone has been very generous and tolerant in his attitude toward such errors, and when criticism was made, it was always with a view of building up the work. Such criticism is always beneficial to any organisation.

Accredited Herds.

As you recall, the original plan for accrediting tuberculosis-free herds of cattle was confined to pure-bred animals; that is, the herd was required to have at least one pure-bred animal in it. After the expiration of one year, the plan was amended so as to include strictly grade herds as well. No doubt that arrangement was the means of interesting more livestock owners in the campaign, but the list became so unwieldy that it was impracticable to maintain a list of owners whose herds were placed in that status. I would like to see every pure-bred herd of cattle in the United States on the accredited list, and confine the publication of that list to strictly pure-bred herds, so that breeders might be fully informed at all times of the status of the herd out of which they would probably purchase animals. There are so many owners of grade herds who are indifferent to the accreditation that we are scarcely warranted in going to the expense of providing them with accredited herd certificates, because a high percentage of them fail to carry out the provisions of the plan.

There were on December 1st, 81,286 accredited herds. A remarkable increase in the herds has been made during the past four and one-half years—an increase of 891·2 per cent. The summary that is published monthly shows that some of the States make a great effort to accredit all herds that conform to the uniform plan; on the other hand, there are States that are not very much interested in accrediting individual herds, and prefer that the campaign be confined to strictly area work and to the modification of groups of herds in the county that qualify. Of course that is a matter for the determination of each State, but it does seem that at least the accrediting of individual herds should be continued, more especially the pure-bred ones. After an area has been modified, there may be buyers in the various parts of the country who are anxious to secure pure-bred cattle for breeding purposes, and a list of such herds, if available, would aid them in locating the animals; it would also stimulate the industry in that way. Shall we go on accrediting herds in the manner in which it is being done to-day, or should some change be made? That is a matter for the consideration of the livestock sanitary officials of the various States.

While we are discussing accredited herds, I feel that it will be of interest to most of you to know of the number of herds that are removed from the list on account of re-infection found on re-test. The records show that of 20,000 accredited herds re-tested within a specified time, 5.2 per cent. were removed—due, principally, to the additions of cattle that were not tuberculin tested in compliance with the uniform plan.

It is freely admitted that there are herds that, notwithstanding our best efforts, persist in showing up infection, and those cases undoubtedly are due to old animals in the herd that continue to disseminate infection but fail to react to the tests applied. But these cases are so few in number that they are most conspicuous in each of the States, and while they are discouraging, they certainly cannot influence the favourable results that are accomplished in more than 99 per cent. of the balance of the herds in these States, and even in those herds the disease eventually is controlled. Of course, in some of the herds it is not controlled unless the entire herd is destroyed.

On November 1st, there were 1,049,480 herds that had passed one successful tuberculin test; a gain of 2,006.8 per cent. during the four and one-half year period. This class of herds continues to increase and should be of great encouragement to the livestock owners in their efforts to suppress the disease. With this number of herds, representing an aggregate of 8,949,137 cattle, it does seem that there is no longer any excuse for a prospective buyer to go into a territory where the extent of tuberculosis is problematical, to secure animals for dairy or breeding purposes, the health status of which is unknown. A number of States has adopted regulations providing that no cattle shall be added to a herd under supervision unless in accordance with the uniform plan. An effort was made to make that plan as liberal as possible, but consistent with the restrictions necessary to maintain tuberculosis-free herds of cattle.

On May 1st, 1921, there were under State and Federal supervision 1,195,797 cattle; at this time there are almost 13,000,000 cattle; an approximate increase of 965.7 per cent. in the four and one-half year period. With the rapid increase of area work, it is contemplated that the number under supervision will be greatly augmented within the next twelve months.

As ofttimes repeated, the original plan for co-operative work contemplated the area method of conducting the work. It is needless to attempt to point out its manifold advantages over individual herd testing; suffice it to say that 642 counties, representing 20.9 per cent. of the total counties of the United States, have taken up area work. Of that number, 137 counties have completed the work to the point where it is definitely determined that tuberculosis exists to less than one-half of 1 per cent. of the total cattle population. The balance of the

counties, 505 in number, are at the present time actively engaged in the suppression of the disease, with the ambition to reduce the infection to one-half of 1 per cent., and ultimately entirely to suppress it. It is rather difficult to realise the rapidity with which this phase of the work has won popular favour. There was justification in believing a few years ago that it would be as impossible to enlist the support of 100 per cent. of the livestock owners of the country as it would be in other work, the merits of which are less apparent than in tuberculosis eradication.

State and Federal Indemnity.

The sum of one million dollars was appropriated by Congress for use in the payment of Federal indemnity for tuberculous cattle during the year ended June 30th, 1920, and approximately $1,333,500 were available for State indemnity during the same period. The amount available for this purpose during the present year (1925-26) is approximately $13,000,000. Two millions five hundred and seventy-eight thousand of this sum were appropriated by Congress. The remainder is provided by appropriations made by the various State legislatures, and, in some cases, from county funds. This increase in indemnity funds during the last five years is due to the increasing demand of the livestock owners and others, who realise the importance of eradicating tuberculosis. The increase over this period has been gradual, and the amount of indemnity funds at present is much greater than ever before. The greater part of the funds for paying State indemnity is provided by State legislatures, but in a few States laws provide for the raising of funds by a tax on all property, in a county where tuberculosis work is taken up, or by a tax on the cattle. A part of the funds also comes from general county funds in some States. The governing bodies of our States and Federal Government have been liberal in providing compensation for owners unfortunate enough to possess tuberculous cattle, but the time for any reduction in appropriations for this feature of the work has not yet arrived, although judging from the progress which is being made, the time will come when smaller amounts will suffice. Probably a gradual reduction will take place similar to the increase made necessary as the campaign progressed.

Under the Federal Indemnity Law the amount per head that can be paid by the Federal Government is limited to $50.00 for pure-bred cattle, and $25.00 for grades, but other restrictions are made in the law and the same depend upon action taken by the co-operating body.

The methods of paying State indemnity vary, but are more uniform now than when co-operative work began. The tendency of State legislatures has been to reduce the maximum per head, and to base the payment on a fraction of the difference between the appraisal and the net salvage received by the owner. In the majority of the States the amount received from State and Government is the same.

An important change in the laws of some States has been made in order to provide that an owner will receive the same amount when Federal funds are exhausted. This is done by the State or county assuming the Federal share, and permits the work to proceed as long as local funds are available.

Avian Tuberculosis.

When the uniform methods and rules were adopted in 1917, but little thought was given to tuberculosis in poultry because it was not known to exist to any great extent in many sections of the United States. It has been known for a long time that the avian tubercle bacilli would infect swine; however, it has only been within recent years that it has become apparent that this source of infection must be eliminated in order to eradicate tuberculosis in swine, which is one of the projects included in the original tuberculosis eradication programme.

Avian tuberculosis exists to an alarming extent in the Corn Belt of the United States, and it is causing great losses annually in poultry and swine. In poultry it very often spreads so rapidly that it soon makes a farm flock unprofitable because of numerous deaths and loss in egg production. This disease usually only affects the hog very slightly, in such parts as the glands of the head and mesentery. Such infected parts are not suitable for food and the financial losses in swine are largely caused by the condemnation of these parts.

The Bureau has made a map showing the sections of the United States infected with avian tuberculosis; it indicates that the States east of the Alleghany Mountains and south of the Mason-Dixon line have very little tuberculosis in their poultry flocks. When it is recalled that poultry raising is practiced on a very large scale in such States as New Jersey, it is difficult to understand how their flocks have been maintained practically free.

A great deal of thought has been given to the formulating of a practical plan for eradicating poultry tuberculosis. The plan should be one that can be carried out by the same inspectors who do the tuberculin testing of the cattle. It does not seem practicable to tuberculin test every farm flock, as the time required in many instances, would make such a practice prohibitive. A plan that is being practiced in a number of States is as follows:—

When a veterinarian visits a farm to apply the tuberculin test to the cattle, he is directed to make an inspection of the poultry. If suspicious birds are found, permission is asked of the owner to slaughter them and to hold a *post-mortem*. If tuberculosis is demonstrated, the owner is advised to slaughter all clinical cases and to vacate the premises of all poultry. The usual sanitary measures are recommended, and after a lapse of a few months, the farm may be re-stocked with day-old chicks, or with mature birds, if they are free from disease.

Operating on this plan, the veterinarians engaged in tuberculosis eradication work since February, 1925, have inspected 115,715 flocks, of which number 5.8 per cent. was found to be infected with tuberculosis. These flocks contained 8,108,859 fowls, and the estimated infection has been placed at 0.07 per cent.

Case reports made by field veterinarians indicate that there is a great danger of spreading avian tuberculosis by shipping day-old chicks.

No-Visible-Lesion Reactors.

The subject of the absence of macroscopical lesions in reacting cattle has furnished material for animated discussions from the time tuberculin was first used as a diagnostic agent up to the present day and, undoubtedly, we shall continue to make a study of it.

The present day methods of testing are no more prone to increase the no-lesion cases than were the methods in vogue during the period when two or more days were consumed in testing herds by the subcutaneous method. You will observe that of the 75,887 reactors slaughtered from July to October, inclusive, all showed macroscopical lesions except 6.4 per cent. The number of no-lesion cases found among the 19,000 reactors slaughtered during October amounted to 5.1 per cent. This percentage compares very favourably with the records of testing throughout the period during which tuberculin has been employed. Several years ago we had occasion to look up the testing done in one of the leading dairy States of the country. These records showed that the no-lesions cases from 1918 to 1921 varied from 4 to 6 per cent. That was during the period when the subcutaneous method was the only test employed.

The Bureau has for many years been making a study of the no-lesion cases among reactors, which revealed many reasons why difficulties would be encountered in the classification of reactors and subsequent autopsy findings. None but the most careful technique in applying tuberculin will bring forth conditions that will not interfere with the proper interpretation of observations. By this I do not mean to infer that the technique of the field man is not of a high standard, but we all realise that, until by careful practice the operator has become efficient, there is some faulty work done that may bring about swellings at the point of injection that are perplexing. To what extent the animal tissues are sensitised to tuberculin by organisms other than tubercle bacilli is a matter to be determined by complete investigational work, but reviewing the present-day conditions that exist in areas where tuberculosis infection is limited, I cannot understand why it should be greater in one locality than in another, unless there are organisms indigenous to certain soils and capable of sensitising the tissues of cattle. To illustrate what I have in mind, there were tuberculin tested in a group of the Southern States, where infection is slight, 325,313 head of cattle, of which 1,811 or 0.5 per cent. reacted. If there had been any considerable sensitisation caused by bacteria other than tubercle bacilli, it would seem that more cattle would have been classified as reactors.

Personnel.

There is a total of 963 veterinarians devoting their entire time to tuberculosis eradication work; 514 of them are employed by either County, State or Federal Governments; 449 are accredited veterinarians, most of whom work on a *per diem* basis. Approximately 1,000 of the total veterinary personnel of the United States are rendering a great service to the nation, as well as reflecting credit on this choice of profession. Every indication points to a gradual increase in the number of veterinarians required to take care of this line of work. With the increase in numbers of the towns and cities that, by ordinances or otherwise, are requiring the annual tuberculin testing of dairy cattle, it is an easy matter to realise that, as this custom becomes permanently established, there must be organisations in the various States and Counties, and adequate forces to take care of this line of work. While the work must always be conducted under proper supervision, requiring organisations to direct it, I see no reason why the testing cannot be done by the general practitioner. It would also seem feasible to have the veterinary personnel in each State so organised and distributed that the tuberculin testing of all dairy herds may be accomplished annually.

Veterinary Dentistry.*

By S. E. Hershey, Charleston, W. Va.

"This subject for some reason for many years was very much neglected and hooted at by many of the leading veterinarians, and, in fact, the veterinary colleges gave but little attention to it until about twenty or thirty years ago. The groom and stable man, blacksmith, locksmith, or cross-road storekeeper, with his steady punch and hammer or mallet and pair of tongs, was looked upon as the scientific dentist or tooth-puller, as he was called in those days.

"I think the McPherson and the Lucas veterinary schools located at Toronto, Canada, were the first to give a course of instruction in veterinary dentistry. There may have been a school that sprang up in Chicago and also in New York that gave attention to the subject, but of these I am not so sure. They were held in disrepute by the leading veterinary colleges at that time and condemned, but they, to my mind, did a great deal of good, for their work and instructions were on very practical lines.

"Courses in dentistry were later added to the curriculum of the other veterinary schools. I am very much inclined to think that one of the prime factors leading to these added courses at the colleges was the death of Joe Pachen, a horse that literally starved to death because of a bad tooth. He was treated in the State of California by the best veterinarians there. He was then sent by express to New York City, and there the leading veterinarians were called to prescribe. He received treatment in the way of tonics and everything imaginable to build up an emaciated condition, but all to no avail, and he practically starved to death on a Long Island farm. After decomposition of the soft structures of his head, the actual and

* Reprinted from *Veterinary Medicine*, Chicago, March, 1926.

true cause of death became visible. Photographs showed the fourth upper molar was one and one-half inches longer than normal, and the lower molar opposing it was entirely worn away, nothing being present but the old decayed root in the dental alveoli with a carious condition at the root. This condition is only one of the many hundreds that have caused veterinary dentistry to develop as it has. This horse, no doubt, could have been saved many months and years of torture if his mouth had been examined thoroughly, and very likely he would have rendered many more years of usefulness.

"I think there is more trouble with young colts and puppies shedding their milk teeth than in older animals with their permanent teeth. At this age in the young, there is a great deal of stomatitis, lacerated tongues and cheeks due to the sharp edges cutting them. Watery eyes and ptyalism are also found in colts and horses while shedding their teeth. In puppies and cows there is sore mouth with much congestion of the mucous membrane followed by convulsions and an irritated mental condition, in dealing with which one must be very careful and very conservative in diagnosis, particularly in the dog, for many times at this stage the animal shows symptoms somewhat similar to those of rabies, nipping and biting, and no doubt many puppies have been killed in this condition by those who mistook it for rabies. If such animals had been kept in quarantine for a few days and history of the cases obtained, many valuable lives could have been saved, for as soon as these caps or milk teeth were shed and the permanent teeth erupted, this mental condition would have abated.

"The hard structure of the teeth consists of, first, the enamel; second, the crusta petrosa or cement; and third, the dentine. The soft structure consists only of the pulp.

"The division of the tooth is as follows: first, the crown; second, the neck; third, the fang; fourth, the root; fifth, the table surface; sixth, the infundibulum; and seventh, the cup.

"In the horse there is one tooth of which all no doubt have heard and one that has caused more pain and torture than any other tooth known. This tooth seems to be the cause of all ailments to which horse flesh is heir—moon blindness, weak eyes and many other ailments have been attributed to the little old wolf tooth. The so-called scientific dentist of his day, the blacksmith, with his punch and hammer, in attempting to knock out these teeth could only break them off and leave the roots still in the jaw, which would be the actual cause of trouble, if they were the cause of the supposed ailments. In many cases, the punch was allowed to slip and in so doing the enamel was broken on the first molar, causing it to decay and finally call for extraction.

"Another condition about which one will be asked, regarding which I am sorry I can offer no enlightenment, is the black teeth of the hogs. This, like many other old traditions, has been handed down from generation to generation, and I am sorry to say it still exists in many localities at this stage of civilisation. Like hollow horn and wolf in the tail of cattle, the mystery of black teeth in hogs perhaps will never be overcome.

"Malformed or misplaced teeth occur where the dental cells have located in their embryonic form in various places such as the parotid gland and sometimes in the testicles and scrotum. At times they cause fistulous tracts to form, in which case their removal by surgical operation is indicated, using the same technique as in fistula elsewhere. They are sometimes found lying perpendicular with the permanent molars and incisors or in the different sinuses of the head, where they remain for years without causing any trouble. In such cases, it is best to leave well enough alone. But if they cause any trouble such as ulcerations, nasal catarrh or fistula, their removal by trephining or expulsion is followed by speedy recovery.

"Odontomata are due no doubt to some perversion of the fetal evolution. Abolition is advised when there is interference with the normal functions of the nasal chambers, by trephining or the bone chisel as advised in extraction of the molars.

"Supernumerary teeth refer to an extra number either of the incisors or the molars and may be either a double row or an extra tooth inside or outside of the natural row. They, as a general rule, can be extracted without much trouble, but as long as they cause no interference with the normal conditions, it is advisable to leave them alone.

"Among malformations of the mouth, there is first, brachygnathia or parrot mouth, where the upper jaw is longer than the lower. Then, we have the opposite, prognathism, the under jaw being longer than the upper. In these two conditions, we occasionally find in horses that are grazing difficulty in prehension of the food, and consequently they may not be able to keep in good flesh. However, one may be very much surprised to see how some horses and mules in this condition are able to use the dental pad as a substitute for the teeth. As the molars are usually good, the animals can properly masticate their food and keep in good flesh. Then there is the scissor mouth, where the molar teeth do not wear, due to the irregularity of the outer edge of the upper teeth and the inner edge of the lower teeth growing excessively long, allowing these edges to become excessively long and sharp, thus the outer edge of the upper teeth cutting the cheek and the inner edge of the lower cutting and lacerating the tongue. This is due to the lower jaw being so much narrower than the upper. The condition may be corrected to a great extent by the use of the cutters and the float. But a word of caution here—be very careful in the use of the cutters and the float in correcting this as well as minor irregularities of the same nature, for we must remember that the table surface of the grinders or molar teeth is slanting, and if we take too much off these edges, there is likely to result a flat surface, and then the horse will not be able to hold grain between the teeth and cheeks while mastication is going on. I have seen this occur in a number of cases where the power float has been in use and the operator doing the work not knowing the natural condition of the teeth. I think this is one of the things that has brought veterinary dentistry into disrepute in many localities.

"An examination of the teeth as to soundness reveals many irregularities, of much importance to the veterinarian, for by this method he must decide the age of the

animal—horses, mules, cattle, sheep and dogs. Possibly in the horse there is more deception than in any of the others. For in horses there is practiced what is termed bishoping—the drilling of the table surface of the teeth of the aged animal, then filling the cavities with nitric acid or burning them with the hot iron, thus making a dark cup to deceive the unsuspecting. This, of course, is done only after the natural cups have disappeared. The veterinarian, knowing the conformation and the angle of the incisors in the jaw, together with decayed, worn molars, can readily discover the irregularity.

"In trephining a molar tooth affected with an abscess at its root, first place the animal in a standing stall by backing him in; then place a dental halter with two straps fastened to each side of the stall, placing a surcingle around the body and fastening a strap from the halter to the surcingle as a martingale. Now, the horse's head is restrained. He can neither turn to the right nor the left, nor raise his head. A twitch may be used in some cases if necessary. Next a speculum is placed on the horse. With one hand in the mouth and the other on the outside and over the region of the tooth, it can be located and its general direction followed as a landmark. After this has been done and the angle of the tooth located, with a sharp scalpel make a cut at right angles over the location of the root, laying back the four lips of the wound, then inserting the trephine and drilling through into the sinus. I should have said that the field of operation should be thoroughly cleansed and disinfected by clipping the hair, washing, drying and then painting with tincture of iodine before the operation is begun. The trephine used in this case should be $\frac{3}{4}$ to $\frac{7}{8}$, or even 1 inch is not too large in some cases. Then with the punch on the root of the tooth through the trephined opening and one hand in the mouth on the crown of the tooth, with a firm stiff stroke with the mallet or the hammer, the molar should be loosened sufficiently to be removed with the forceps or in some cases can be lifted out with the fingers. The wound is then cleansed and kept clean and if so will heal in from two to four weeks. Sometimes it is advisable to pack the cavity with a gutta percha plug, which must be placed in position while it is quite warm so that it will take on the general shape of the cavity into which it is being placed. The trephined opening must not be allowed to close too soon. Sometimes in highly-bred and nervous horses, a general anæsthetic will have to be used.

"A condition in horses that we must not confuse with diseases of the teeth is osteoporosis, commonly termed big head, or osteomyelitis, a softening of the bone. The same applies to glanders in horses and actinomycosis in the cow. It is true that there may be loosening of the teeth in either of these conditions and due to them. In dogs and cats we often find foreign bodies, fish bones or small chicken bones, lodged between the teeth. These can, as a rule, be removed by placing a speculum on the animal and using the ordinary splinter or dressing forceps. In the horse and cow, sometimes corn-cobs, nails or pieces of metal of different kinds lodge between the teeth, or the animals may bite on a hard substance and break or split a tooth, which calls for extraction.

"Among vices and habits caused by the teeth may be mentioned cribbing or wind sucking. Here again is a condition that in examination for soundness may try the veterinarian's skill. But by close attention and observation, the anterior borders of the central and middle incisors will show where they have been broken or worn off by taking hold of the manger, fence or any hard surface. An operation of sawing between the central incisors is said by many to cure the vice. Another operation for this condition is myotomy of the sterno-maxillary muscle in the upper third cervical region. But neither of these operations has proved satisfactory in all cases. The only method that has been satisfactory is where a strap, $1\frac{1}{2}$ to 2 inches broad, has been kept buckled around the neck of the horse at the throat latch. This will prevent the animal from taking hold while he is wearing the strap, and then he is placed in a stall where he has no possible chance to get hold of the manger or rack. Even this method, after horses have been submitted to it for years, has failed to effect a permanent cure.

"Habitual ptyalism, continuous slobbering due to the irregularities already mentioned, side reining, pulling on one side or another, caused by sharp and irregular teeth, may be corrected by floating. Other conditions are habitual tongue lolling, bit lugging, facial paralysis (sometimes called Bell's paralysis), due to paralysis of the seventh cranial nerve, and a partial or complete unilateral molar paralysis.

"A veterinarian cannot use too much care in his examination of the mouth and teeth of all animals, their physiological functions relative to the health of the patient and their pathological conditions caused by the different irregularities and accidents mentioned. In this article are noted a few of the many conditions that the practitioner is called upon to consider and pass his opinion on. I have said nothing as to the cups changing in the dental development of the incisor teeth or their conformation according to age. This in itself would require a great deal more time and a more lengthy paper, to go into details."

Prussic Acid.

"Very few pharmacists," says "Criticus" in *The Pharmaceutical Journal*, "will supply a member of the public with prussic acid—no matter how apparently *bona fide* may be the purpose for which it is required. I have never yet sold this poison over the counter or met with a pharmacist who would, in any circumstances, consent to do so. Customers have asked for prussic acid, saying it was required for killing a dog or cat, and the answer has always been, 'Bring the animal here, and we will destroy it; but we cannot sell you the poison.' This attitude is, of course, purely voluntary, but its general adoption by pharmacists has probably saved hundreds of lives. Suicide may be attempted with many other toxic substances and fatal outcome may be prevented, but with hydrocyanic acid repentance comes too late, and the knowledge of this causes the pharmacist to keep the strictest guard over his stock. A recent suicide by means of hydrocyanic acid has directed attention to the fact that the implied obligation of not selling his poison to the public is not always observed; but I think that such cases are very few and far between. No one could grumble if prussic acid were scheduled as a Dangerous Drug subject to the single regulation that it must not be supplied to anyone but a veterinary surgeon."

The Veterinary Record.

31st July, 1926.

MUTUAL AID.

The tradition of self-absorption which has descended to us from those who practised veterinary medicine and surgery in former days, has always been something of a handicap to the realisation of the chief aim of our Association—the welding of the profession into an organisation sufficiently powerful to promote the well-being of its members. A "lone trail" was once the popularly-accepted path for the veterinarian, and his emergence upon the broad highway of co-operation with his fellows in his own and the sister profession is a matter of comparatively recent history.

The growth of the "National" itself bears the best testimony to the general abandonment of the position of "splendid isolation" adopted by men who saw an uncompromising, if not an unprincipled, opponent in every neighbouring practitioner, and to whom the idea of association with their fellows for the purposes of scientific and social advancement was a crude Utopianism.

Pioneers of what may be termed the Association Movement in the profession accomplished an heroic work in overcoming the fear of the consequences of the acceptance of the doctrine of mutual aid, which apprehension, to a far greater extent than the alleged apathy of the profession, constituted a menace to their ideals. Their successors have built up an organisation capable of contributing very materially to the achievement of the aim of the Royal College—that of establishing a corporate sense amongst its graduates, and it is a natural sequel to their progress amongst veterinarians in the British Isles that they should now be seeking to carry their banner further afield.

To this end, the assistance of members resident in the Colonies has been sought to bring those who, while not with us are yet of us, in closer touch with the veterinary profession in this country, through the medium of the *Record*. These efforts are meeting with whole-hearted support, and the first contribution received from our newly-established corps of Colonial correspondents is published this week. We are confident that Mr. Bevan's article will be read with as much pleasure by our readers at home as by those in the country of their origin and in other Colonies and that it, and others which will follow in due course, will do much to foster that fraternal concern for the interests of British veterinarians the world over which is essential for the success of the Association's new venture.

It is with very real gratification that we publish the following list of those who, up to the present, have consented to act as Colonial correspondents for the *Record*:—

Ll. E.W. Bevan, M.R.C.V.S., Director of Veterinary Research, Salisbury, Southern Rhodesia; G. Pfaff, B.Sc., M.R.C.V.S., G.V.O., Estcourt, Natal; R. J Roe, M.R.C.V.S., V.O., Nicosia, Cyprus; H. G. Simpson, F.R.C.V.S., G.V.O., Penang, Straits Settlements; Walter Taylor, M.R.C.V.S., D.V.H., Punjab Veterinary College, Lahore, India; Professor H. A. Woodruff, M.R.C.V.S., M.R.C.S., L.R.C.P., Director of the Veterinary Institute, The University, Parkville, Melbourne.

We hope that the list by no means exhausts the number of those who are prepared to act in this capacity, but Colonial veterinarians who are not accredited Colonial correspondents are reminded that the Editorial Committee will welcome their contributions also.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Examinations—July, 1926.

LIST OF SUCCESSFUL CANDIDATES.

(*Continued from page* 637).

GLASGOW.

Class A.

Gillies, L. G. (Miss)
Gray, W.
†Kinghorn, F. J.
†May, T. L.
†Menzies, D. W.
†Slavin, G.
†Stewart, J. R.
†Stewart, M. (Miss)

Class B.

Bartholomew, A.
Brown, B.
Hamilton, J. C.
†Ingram, J. McC.
†Leckie, P.
McArthur, N.
†McArthur, J.
*McDonald, J.
McGaughey, J.
†Pottie, B. H.
*Stewart, H. G.

Class C.

†Grant, W.
†Johnston, T.
Macmenemey, J.
†Morton, J.
McGilp, A.
Nicolson, J.
Nicolson, N.
Patterson, J. H.
Spence, J. A.
Watt, G.
Watt, J. S.

Class D.

Bogue, J. Y.
Drummond, D.
MacColl, M.
Marshall, R. S.
Mason, J. F.
McNiven, A.

* denotes 1st Class Honours.
†denotes 2nd Class Honours.

DUBLIN.

Class A.

†Clarke, A. M. H.
Harris, A. P.
McMahon, J. P.
†O'Brien, H. V.
†O'Connell, J. L.
*Hueffer, K. (Miss)
†Moore, G. A.
†Reeves, D.
Sadlier, T.
Moloney, P.

Class B.

Beckett, J. F.
Boyle, J. J.
Dunn, T.
Furney, J. E.

Class C.

Bisset, H. (Miss)
Glanville, W. H.

Class D.

Hinds, V. C.
Hunt, H. A.
Johnston, A. J. E.
King, W. J.
O'Brien, D. L.
Rogan, P. A.
Taylor, J. C.
Woodward, O. (Miss)

* denotes 1st Class Honours.
† denotes 2nd Class Honours.

CLINICAL AND CASE REPORTS.

Milk Fever in the Ewe.

By Capt. O. V. GUNNING, M.R.C.V.S., Tutbury.

On March the 17th a small Cheviot ewe was left at my surgery with a request that I should treat it if possible. The only history given was that the ewe had given birth to twin lambs two days previously.

When I examined the ewe it was lying on its side on some straw in a loose box. The little animal appeared quite helpless and I found it unable to stand. There were no brain symptoms; the eyes looked bright and clear, but during the examination it looked up with an appealing and pitiful expression. I found the temperature normal and the breathing fairly regular. Being at a loss to know what to do for it, I decided to inflate the udder.

The next problem was to find anything small enough to enter the teat canal: my smallest teat syphon was far too large. After some difficulty I found that a hypodermic needle, as used for the intradermal tuberculin test, entered quite easily. This I attached to a milk fever outfit and, while the apparatus was not ideal, I was able to inflate both quarters without assistance.

A message was left for the owner, should he call, that the animal had been treated, but that I had little hope of its recovery. This was at lunch time. When I returned again at about 5 o'clock, I was surprised to find the ewe up, when it presented a very different appearance. Its natural instinct of fear had returned and when I approached anywhere near the loose box it appeared to want to walk up the walls. I therefore very cautiously placed some hay and water round the corner of the door, and from a long range view, and an hour or so afterwards, I could see it lying in a natural position contentedly chewing its cud.

From enquiries of the owner a few days later I learnt that the ewe was going on well.

Injury to a Dog's Back.

By Captain H. BURRELL, M.R.C.V.S., Croydon.

The patient was a Fox Terrier, and was missed, after dark, on the evening of November 21th, two years ago. Next morning he was found in the road, outside his own home, dragging his hind limbs, as if paralysed, evidently from injury to the back, probably caused by a motor-car, as there were, in addition, contusions on the right side of the chest wall.

After an interval of 24 days, the animal was able to walk very well, with the hind limbs held rather far apart at first.

On the first day antiseptic solution was applied to the contusions on the back and ribs, and potassium bromide and chloral hydrate were given internally, in small doses, as the animal was agitated and in some pain.

Antiseptic applications were used to the end of the month, and laxative powders mixed with the food occasionally, as required.

On December 2nd, the hind limbs were tested with a battery and were found to have sensation, though the feet could be moved only to a moderate extent.

The skin on the front of the hind limbs quickly became abraded from trailing over the ground, for the dog could not be prevented from dragging himself about all day long, as he fretted very much if chained up. His appetite remained good, and he never lost heart at all.

From the first day onwards bandages were applied from the hocks to the feet, though they were continually being worn through from the friction when dragging over the ground—so much so, that for a week potassium iodide was administered twice a day, to prevent, if possible, septicæmia occurring by reason of the abrasions on the front of the limbs being so frequently soiled with dirt.

On December 19th, the dog could walk very well, therefore I did not call again until requested to do so on April 11th of the next year. The animal persistently attempted to jump low wire fences, knocking the front of the hind limbs on the top rail and causing a nasty wound which healed after the application of antiseptics and bandages.

On enquiry, in July of this year, his owner had taken him away on a holiday, and the animal was apparently in perfect health.

Eruption of Distemper.

By HENRY GRAY, M.R.C.V.S.

Some few weeks ago Mr. Dunkin read, before the Central Veterinary Society, a paper on the vesico-pustules of distemper and described that eruption, when present, as having no connection at all with that disease. Mr. Dunkin was, however, absolutely silent as to what was the characteristic symptom of that malady.

(*Continued at foot of first column next page.*)

ABSTRACTS.

Surra in the Camel.

The paper contains the author's observations and experiences during a period of two years.

The publication of the "notes" was prompted by the variations encountered by less experienced people in the results of treatment along the lines suggested by Cross, namely, the repeated intravenous injection.

Leckie suggests the classification of surra under three heads: Acute, sub-acute, and chronic, and he tabulates the classifications in the following way:—

Acute.	*Sub-Acute.*	*Chronic.*
Lasting 3-6 months.	Beginning 4-6 months after the first attack and lasting up to two years.	Beginning in some cases a year after the first attack and lasting about three years.
Trypanosomes appear in the blood three or four times a month.	Trypanosomes appear in the blood once or twice a month.	Trypanosomes appear in the blood once in six months or once a year.
Most dangerous stage.	Not fit for work.	Fit for work except during paroxysms of fever.

In addition to the usual symptoms associated with the acute and sub-acute type of the disease, the author notes that camels sometimes show great restlessness, acceleration of respiration, frothing at the mouth, and, if tied down, violent struggling. A free animal may gallop until it falls exhausted, and in such cases death generally takes place.

In the chronic stage the appearance of the camel varies very greatly with the manner in which it is looked after. Animals that are well fed and lightly worked may present no clinical evidence of infection at all. If not well looked after, general loss of condition and enlargement of the superficial glands are observed. There is little or no direct evidence regarding the transmission of surra from camel to camel, but it is significant that if camels are kept away from areas infested by Tabanidae the incidence of the disease is materially reduced.

From experiments it would appear that an interruption of feed is necessary for the transmission of surra, that is to say, a fly feeding on an infected animal must be disturbed and transfer itself to a healthy camel for the infection of the latter. After a full meal on an infected camel the fly digests the blood and is not infective when it bites again. The possibility, however, is not excluded that such a fly might become infective again after an interval.

(*Continued from previous page.*)

Personally, I think (after 40 years close and continuous study of the disease) that the eruption is as characteristic of the malady as any other that may be present in a given case. There is, however, nothing new in this, any more than there is in Mr. Dunkin's statement.

To assist clinicians in diagnosing the malady from any other by a characteristic symptom, perhaps Mr. Dunkin will be good enough to tell us, as we are, no doubt, all willing to learn a new fact.

Leckie draws special attention to the possibility of transmitting the disease to healthy camels through carelessness in making routine blood examinations of a number of animals.

The author describes in detail the whole of the apparatus necessary for the preparation and use of a solution of tartar emetic by intravenous injection. The drug is used at 1 per cent. strength in distilled water injected at body temperature. Before and after the introduction of the tartar emetic solution into the vein a quantity of 1 per cent. salt solution is introduced. From a tabular statement given it appears that 50 cc. of salt solution are used for this purpose, divided into two lots of 25 cc. each.

The needle is sterilised between injections by placing it in methyl alcohol.

In the early stages of treatment the camel has two adverse influences to contend with: (1) Surra toxæmia; and (2) poisoning by the drug. As condition improves tolerance of the drug becomes greater, and in this lies the necessity of very gradual increase in the dosage. Careful watch must be kept on camels under treatment as a certain proportion of animals, and sometimes a large proportion, will become "sick" during treatment. To push treatment when this occurs almost certainly means death. Animals showing symptoms of poisoning have administered to them magnesium sulphate in doses of 2 to 4 lb. in several gallons of water. This may have to be repeated. Temperatures must be taken daily as a rise to 100° F. from the average mean of 98° F. is usually the first symptom of poisoning. The train of symptoms following an overdose is cessation of rumination, loss of appetite, orange-coloured or blood-tinged urine, yellow discoloration of the mucous membranes, lachrymation, dermatitis, constipation, paraplegia and muscle tremors, and disorganisation of the eyes. In connexion with the passage of coloured urine, it is noted that camels which have browsed on "pipal," one of the Indian fig trees, pass urine the colour of red ink.

A standard treatment which yielded 95 per cent. of cures was as follows:—

1st day	20 cc. ½ per cent. solution.
2nd and 3rd days ...	20 cc. 1 per cent. solution.
5th, 7th and 9th days ...	50 cc. 1 per cent. solution.
11th, 13th and 15th days	100 cc. 1 per cent. solution.
On every other day from the 17th to the 35th	150 cc. of 1 per cent. solution.
37th, 39th and 41st days ...	175 cc. of 1 per cent. solution.
43rd, 45th, 47th & 49th days	200 cc. of 1 per cent. solution.

It may be necessary to discontinue treatment for a time if poisoning occurs. The total amount of tartar emetic given is about 30 grammes. In some cases as much as 40 grammes in all have been given. It is said that if re-infection occurs after cure, larger doses may be given as tolerance has been established.

Treatment should not be begun while trypanosomes are demonstrable in the blood, for "fainting" is likely to occur. The *post-mortem* findings in an animal dying under treatment are: Yellow staining of the tissues. Fatty degeneration of the heart. Spleen

slightly enlarged and flaccid. The liver is enlarged and pale in colour with a tendency to a greenish tint. On section the cut surface is bright orange in colour. The parenchyma is readily broken down with the fingers. The kidneys show fatty degeneration. Care must be exercised in the general management of camels under treatment, special attention being paid to the question of suitable food. Digestive disturbances are likely to occur, and a ration of salt helps to overcome this. Some camels apparently cured again fall sick with surra after their return to their owners. These may be relapses, but the possibility is not excluded that they are actual re-infections. Experiments have been made with sodium antimony tartrate in place of the potassium salt. It is said to offer the following advantages: It is less depressing and may be given in larger doses; it clears the circulation of trypanosomes very rapidly; general improvements in health and condition are noted during treatment. While camels appear to be more tolerant of the sodium salt than of the potassium salt, the same care must be exercised in carrying out the treatment.

The treatment has not been under test sufficiently long to warrant conclusions, but it promises well. It has been found that infected camels not showing trypanosomes in their blood may with safety be given an initial dose of 200 cc. of a 1 per cent. solution of the sodium salt.

The effect of the drugs on the trypanosomes was studied in moist and stained peparations at definite intervals (10 minutes) after injection of the drugs. The first indication of action is that the cytoplasm stains faintly. This is followed by a disappearance of the centrosome and flagellum and finally disintegration of the nucleus.

The author describes two forms of trypanosome in camels, a long slender form with a pointed posterior extremity and a shorter broad form with a blunt posterior end, and suggests that the slender forms result from binary division, and then become changed into the broad forms.

[Some Notes on Surra in the Camel, its Prevention and Treatment. V. C. Leckie. *Veterinary Journal.* 1925. June. Vol. 81. No. 6. pp. 281-292; July. No. 7 pp. 346-352; Aug. No. 8. pp. 398-404; Oct. No. 9. pp. 494-499; Nov. No. 10. pp. 546-553. *Ex. Trop. Vet. Bull.* Vol. 14. No. 2.].

Vaccination against Fowl Cholera.

Vaccination of fowls against fowl cholera had not been practised for some time in France on account of the infrequence of occurrence of the disease. The Pasteur Institute had, in fact, given up making the vaccines.

Shortly after the war extensive outbreaks occurred as the result of the importation of birds from German sources.

As it was impossible to prepare vaccines in a less period than some months, the author decided to try the use of a pasteurella derived from a rabbit. This organism, he states, is innocuous for fowls.

As some ampoules of culture were available, the virulence of the organism was restored by passage through guineapigs inoculated intraperitoneally. It was then tested on fowls and found to be harmless, and used as vaccine.

Reports are quoted which show that not only did the vaccine protect healthy birds, but that in some cases birds which were actually ill recovered. In all the cases quoted the cause of death was confirmed at the laboratory as fowl cholera.

Similar results were not obtained, however, in laboratory experiments, and the author explains the difference on the ground that natural infection does not take place in the same way as infection by inoculation. The uncertainty of transmitting the disease by ingestion is known, and the author attempted to get over this difficulty by feeding birds with the contents of the intestine of birds killed by inoculation. He found that he could readily kill the first bird of a series in this way, but that the second failed to become either infected or immunised.

The manner in which epidemics spread among birds, and the persistence of infection in farmyards are therefore matters which are difficult of explanation.

The view favoured by the author is that carriers exist.

In some instances deaths occurred after a lapse of some months after vaccination with the rabbit strain of organism.

An attempt was made to attentuate the strain in the classical manner, but the author notes that caution must be exercised in using attenuated vaccines as in one case, after the virulence had been reduced to a point of safety by prolonged incubation, it became exalted again, or at least it proved fatal in 33 per cent. of birds inoculated with it. The author suggests that certain organisms in the culture had retained their original virulence.

[Quatre annees de vaccination contre le cholera des poules. (Four Years of Vaccination against Fowl Cholera.) A. Staub. *Ann. Inst. Pasteur.* 1925. December. Vol. 39. No. 12. pp. 962-967. *Ex. Trop. Vet. Bull.* Vol. 14, No. 2.]

Dilution of Approved Disinfectants.

Answering Mr. Clayton in the House of Commons recently, Mr. Guinness, Minister of Agriculture, said the Chick-Martin test laid down in the regulations of the Ministry of Agriculture to determine the dilutions at which approved disinfectants must be employed was also adopted for the approval of disinfectants by the Board of Trade and the Office of Works, and he was satisfied this test provided the best means of judging the efficiency of a disinfectant for the purposes of the Diseases of Animals Act.

DIVISIONAL REPORTS.

North of England Division.*

"RECENT PUBLIC HEALTH LEGISLATION AFFECTING THE VETERINARY PROFESSION, FROM THE POINT OF VIEW OF A MEDICAL OFFICER OF HEALTH."

A meeting of the North of England Division was held at Messrs. Meng Brothers' Café, Fawcett Street, Sunderland, on Friday, June 11th, 1926, when Mr. T. Wilkinson, of Lanchester, the President, occupied the chair, the other members present being Messrs. H. Peele, G. M. Mitchell, Hill, J. W. Rider, Harper, H. S. Elphick, Irvin, Gibson, Starkey, C. Elphick, Pickering, Whitfield, T. M. Mitchell, Hicks, Croudace, and J. R. Rider, Hon. Secretary.

Visitors.—Drs. T. Eustace Hill, M.O.H. County of Durham; W. J. Whitley, M.O.H. County of Northumberland; D. Macrae, Tuberculosis Medical Officer, County of Durham; Messrs. W. Lyle Stewart and W. B. McAleer.

Apologies for absence were received from Dr. Thorpe, M.O.H., Sunderland; Messrs. Lawson, Blackburn, Doughty, Dotchin, Taylor, Captain Southall, R.A.V.C., and Mr. Howie, who wrote resigning his membership, with regret, as he was living too far away to be able to attend the meetings, and adding that in time he felt sure the Division would be one of the most influential possessed in the country by the Association.

On the motion of the PRESIDENT, the resignation of Mr. Howie was accepted with regret.

New Members.—Major F. C. O'Rorke (honorary) and Mr. H. Thornton were elected members of the Division.

Nominations.—Major Hobday and Captain Southall (honorary), and Mr. W. Lyle Stewart were nominated for membership of the Division.

Mr. E. R. Gibson, of Seaham Harbour, was elected Senior Vice-President of the Division, in succession to the late Mr. T. T. Jack, of Sunderland.

ADDRESS BY THE DURHAM M.O.H.

An address was then delivered by Dr. T. Eustace Hill, O.B.E., Medical Officer of Health for the County of Durham, on "Recent Public Health Legislation affecting the Veterinary Profession, from the point of view of a Medical Officer of Health."

Dr. T. EUSTACE HILL, at the outset, assured the gathering that it was a great pleasure for him to be present that day, and expressed regret that he had not been able on previous occasions to accept the invitations of the Secretary of the Division to attend. He felt himself, he said, in a somewhat awkward position that day because he had until recently been away on a holiday. He had so much work to do when he got back to his office that he had had great difficulty in getting the proper time for the preparation of his remarks to open the discussion. His main object was to initiate a discussion on an important subject, and he felt quite sure that any points of importance he might omit from his remarks would be raised by the members present in the course of the discussion. He should like, in the first place, on behalf of his own Public Health Service—and he was sure he would, at the same time, be voicing the views of the members of the National Veterinary Medical Association—to express his great regret at the death of one of the most valuable officers of the veterinary service, Sir Stewart Stockman, who passed away a few weeks ago. He thought everybody would feel that the country had suffered a great loss in his death.

Dealing with the subject of collaboration between the Veterinary Medical Service and the Public Health Service, Dr. Hill said the importance of such collaboration became year by year more apparent, although up to a comparatively short time ago there was no association officially between the members of the two services.

The administration of the Contagious Diseases of Animals Act from a public health point of view was, of course, important, especially in connection with such diseases as anthrax, glanders and actinomycosis, the organisms of which were capable of infecting man, often with fatal results. Some of the parasitic worms infecting animals might also cause disease in man, such as the cysticerci and some of the nematodes, but fortunately in this country it was rare to find these parasites in animals used for human food.

A disease which had exercised local authorities and veterinary surgeons of recent years was foot-and-mouth disease, which might also be conveyed to man by direct infection and through milk, though the number of human infections was small, and he did not intend further to refer to those infections, as, from a public health standpoint, they were of minor importance. The meat from affected animals was not knowingly used as food, though he held the opinion that there was very little risk of human infection from the consumption of the meat of such animals if properly cooked, and his opinion in that respect applied to the flesh of all tuberculous animals.

The one great danger of human infection from diseased animals was in connection with the milk, which was so frequently consumed in an uncooked state, and he should confine the remainder of his remarks to that subject, more especially as recent legislation had for its object the improvement in the purity of the milk supply and the elimination of milk as a disease-producing factor. The danger of milk causing disease had of late years been much reduced. In the earlier years of his official life one constantly heard of or came across outbreaks of enteric fever, scarlet fever, diphtheria and illness of a septic character being caused by infected milk, but of late years such outbreaks had been less frequent—had been rare, in fact, and that owing, he had no doubt, to greater cleanliness in the production, transit and storage of milk, and also to a much improved control of cases of infectious disease. They all knew, as well as he did, that the hygienic conditions under which

* Received on July 1st.

milk was produced, vended, and stored were still far from satisfactory, that the housing of a large proportion of milking cows was still deplorable and that many necessary precautions against pollution were ignored; but, all the same, speaking generally, the improvement during the last twenty years had been very marked. The appointment of agricultural inspectors, the development of clean milk competitions, and the public and scientific attention which had been given to the question of milk purity had all had a beneficial effect, and were slowly wearing down the innate conservatism of the farmer and his opposition to improvement.

In regard to one disease, which was so prevalent among bovine animals and so fatal to human beings that it had been called the "White Plague," there had, however, been very little improvement. He referred to tuberculosis, which decimated our herds and was responsible for over 10 per cent. of the total deaths among human beings in this country. Bovine tuberculosis was, without doubt, easily conveyed to man, and it was also true, without doubt, that at least 40 per cent. of the total cases of tuberculosis among infants and young children were the result of the consumption of milk from tuberculous cows. On the other hand, it was not easy to infect bovines with the bacillus of human tuberculosis, which was chiefly the cause of pulmonary tuberculosis or consumption. Moreover, there was some evidence that the bacillus of bovine tuberculosis was, to some extent at any rate, inimical to the human organism, and that children who had been infected by the bovine bacillus had become immunised against infection by the human type, and it had been suggested that advantage should be taken of that fact by infecting children with bovine tuberculosis so as to prevent infection by the human bacillus in later life. He could not himself give any approval to such a dangerous proposal. He had no doubt whatever that the infection of the human race by bovine tuberculosis could be easily prevented by the stamping out of tuberculosis among cattle, and that that desirable result was not an impossibility.

Bang, of Copenhagen, showed many years ago that the calves of tuberculous parents did not inherit the disease, and that if they were separated from the mother after birth and kept from the risk of tuberculous infection subsequently they did not contract tuberculosis. He had no doubt also that if milch cattle were kept under hygienic conditions, periodically tested for tuberculosis, and those to which suspicion attached segregated, there would, in a very few years, be a marked reduction in bovine tuberculosis, and that at no distant date it could be eradicated from our herds. All recent legislation affecting the veterinary and public health services had the object of improving the purity of the milk supply and the prevention of tubercle-infected milk in view.

The Milk and Dairies (Amendment) Act, 1922, had an important section prohibiting the sale of tuberculous milk; another section giving power to the Ministry of Health to enforce by mandamus any Order they might make, after inquiry, on a local authority who made default in its duties under the Act or any Order relating to milk and dairies, and the Act also provided for county councils taking over the duties of defaulting authorities at the expense of such defaulting authority. The Act also provided for the issue of licenses to sell milk under special designations such as "Certified," "Grade A," and "Pasteurised," and it was in this particular direction that the services of the veterinary surgeon were required. It was very unfortunate that milk producers in the North had not to a greater extent taken out licenses to produce these specially designated milks, more especially as the results of clean milk competitions had proved that many farmers could produce milk which came well within the requirements laid down for these designated milks. Up to the present only three licenses for Grade A milk had been applied for in the County of Durham and two of these were granted, and at present two other applications were under consideration. He was not one of those who favoured the pasteurisation of milk on a large scale. Such a proceeding was an admission that our methods of production were faulty, and it was much better to concentrate on such an improvement in our methods as would ensure a milk supply which was clean and free from disease germs. Moreover, if pasteurisation was generally practised it would tend to delay the taking of steps to improve the purity of milk at its source, and another objection was that pasteurisation might enable dealers to supply stale milk. Admittedly, pasteurisation, efficiently carried out, would kill most of the disease-producing organisms found in milk, including tuberculosis, but their policy should be to obtain a clean and pure milk supply, and not to attempt to sterilise a dirty and impure milk. (Hear, hear.) Undoubtedly, a wise domestic policy at present was to boil all milk before consumption, unless satisfied that the milk was free from suspicion, and he was confident that one of the reasons for the improvement in the health of our infant population was the use of dried milk as food in the place of the unwholesome cow's milk so frequently supplied to our industrial population.

The most recent legislation affecting the veterinary and public health officers was the Milk and Dairies (Consolidation) Act, 1915, and the Tuberculosis Order, 1925. Both these enactments were approved by Parliament more than ten years ago, but were held up owing to the war and the resulting conditions, but both the Act and the Order came into operation in September last. Although the 1915 Act dealt with other matters, the main object of both the Act and the Order was to prevent the spread of tuberculosis from cattle, and at present in the County of Durham the two Acts were being worked in conjunction. The Tuberculosis Order of 1925 contained valuable provisions enabling the slaughter of animals suffering from tuberculosis of the udder or giving tuberculous milk, or which suffered from tuberculous emaciation, or from a chronic cough with definite clinical signs of tuberculosis, and compensation was payable by

local authorities. A comment he had to make was that it appeared to him that it was unfair that the local authority should be required to pay 25 per cent. of the amount of the compensation, and should have to incur other administrative expenses of considerable amount. It would have been far better if the whole of the compensation had been made payable by the State.

Another comment was that the Order only dealt with cattle suffering from tuberculosis in an advanced form, but he was quite satisfied that the Order, if efficiently enforced, would result in a great step forward towards the elimination of tuberculosis from bovine animals.

A circular, No. 13, had been issued to local authorities by the Ministry of Agriculture and Fisheries relative to the Tuberculosis Order, 1925, which recommended that, while the veterinary inspector was authorised to submit any sample of milk, fæces, etc., to an approved pathological institute, the inspector should be in a position to examine any such samples without the assistance of a pathological institute, and the local authorities were recommended to issue instructions to the veterinary inspectors that, in the case of cows suspected of having tuberculosis of the udder or giving tuberculous milk, samples of their milk should be centrifugally examined by the most exhaustive methods for tubercle bacilli with a microscope. In the case of animals suspected on account of abnormal discharge, the latter should be examined microscopically for tubercle bacilli. He thought this recommendation of the Ministry of Agriculture was unfortunate and misleading, for it was not possible, by the most careful microscopical examination by an expert pathologist, to observe whether a sample of milk or other specimen contained tubercle bacilli, for such organisms might escape detection under the microscope though present, and, on the other hand, there were several other acid-fast bacilli which, by microscopical examination alone, could not be distinguished from the bacillus of tuberculosis. He was quite satisfied that if accurate information was required as to the presence, or otherwise, of tubercle bacilli in milk or other specimens, it was absolutely necessary to submit the specimen to a biological test and, unfortunately, several weeks must elapse before the results of the biological tests were available.

An important recommendation in Circular 13 was that for economic and efficient administration it was desirable that local authorities should arrange that the same panel of inspectors should be available for work under the Order and the Act. That was a very important point and he had gone into the matter very carefully. He had obtained the views of Professor Hutchins and Dr. Savage on this question of the value of microscopical examination, and they both said it was impossible. The only sound test would be a strict biological examination carried out in a proper laboratory. He had strongly recommended his council not to act on the recommendations of the Minister of Agriculture, and had made arrangements that any specimens requiring pathological examination should be sent for examination to a Newcastle laboratory.

The Milk and Dairies (Consolidation) Act, 1915, was probably the most important Act of recent years for safeguarding the public health, and it was, so far as he knew, the first Public Health Act which definitely introduced the veterinary inspector to his proper status. It provided that any inspection of cattle made in pursuance of that Act should be carried out by a veterinary inspector. He thought medical officers of health would recognise that they alone were not sufficiently experienced or sufficiently competent to make the necessary clinical examination of animals which was desirable in connection with tuberculosis and other animal diseases, and he welcomed the provision in the Act of 1915 making it imperative that all examinations of cattle should be carried out by veterinary inspectors. The Act threw very important duties on a county medical officer. It required him to act without consultation with the local authority at all. If he had reason to suspect that any animal was suffering from tuberculosis and liable to endanger the milk supply he had to report the matter to the local authority, who could then summon the milk dealer before them, require him to appear personally or send a written statement, and then could prohibit him from selling milk from particular cows by an Order which would remain in force until circumstances permitted of its withdrawal. That, on the face of it, seemed hedged round with difficulties. Take a council or health committee consisting of anything up to thirty members living in different parts of a county: it became almost impossible to get a body like that together very expeditiously to interview a farmer or listen to a report and take action, but that was the only procedure that could be adopted under the Act. He could not issue an Order. It must be done by the local authority, and the result was that in practical working the carrying out of the schedule became extremely difficult. He had discussed the matter with Major Peele, the County Veterinary Inspector for Durham, and they came to the conclusion that the more effective way of dealing with this matter was for him to report any case of suspected tuberculosis to Major Peele, and for the latter to take action under the Order, make a veterinary inspection, and then, if animals were found to be suffering from tuberculosis, to put in force the clause of the Order which gave power to have the affected animals slaughtered, which procedure would cause less inconvenience to the farmer. That method was working satisfactorily. The owner of suspected cattle could ask that his own veterinary surgeon should be present when inspection was made, and could require that further samples of milk be sent for examination. There had been quite a number of representations from medical officers of health that the result of examination of milk supplies had shown the presence of tubercle bacilli. He had acted in conjunction with Major Peele and cattle found to be suffering from tuberculosis had been dealt with under

the Order. These, he thought, were the most important provisions from the point of view of veterinary inspectors under the Milk and Dairies (Consolidation) Act. Powers were given to such inspectors to enter any premises, inspect any cattle and take any milk samples they thought fit. The veterinary inspector had plenary powers. He was quite sure if that Act, in conjunction with the Tuberculosis Order, 1925, was efficiently enforced they had the machinery which, in a comparatively few years, ought very greatly to diminish the number of tuberculous cattle in this country, and also very largely to eliminate the danger that existed of milk containing tubercle bacilli becoming a danger to the general public. From five to ten per cent. of the milk samples that had been taken had been found to contain living tubercle bacilli; they could, therefore, see how very easy it was for children to get infected with the disease. Veterinary inspectors knew well the requirements of the law and had a much greater power for good than the average inspector of nuisances. A sanitary inspector for a rural district authority was not on a bed of roses, and if he took action which touched the pockets of his employers, many of whom were farmers and some on rural district councils, he was apt to get himself into trouble—more especially as he had no security of tenure. If he interfered with his employers he was apt to make himself very unpopular, and was, if not a strong man, liable to take the course of not interfering too much. A veterinary inspector was in a different position. He was more independent, and could, he was certain, do an enormous amount of good work by persuasion in inducing farmers and milk producers to adopt more hygienic conditions in their farms and insisting especially on the cleanliness of animals and their surroundings, and of their workers. One heard a good deal about the construction of cowsheds and the materials of which they were constructed. His opinion was that the construction of cowsheds was a matter of minor importance provided they were kept clean, well ventilated and well lighted, and suitable steps were taken to secure cleanliness and a good water supply. If cleanliness was kept in view, as good results could be got from wooden sheds as from brick ones. He felt himself fortunate in having Major Peele as his colleague in the carrying out of the regulations. They had always worked extremely well together. His great ability and experience in veterinary matters he had always found most valuable, and he considered himself one of the most fortunate county medical officers of health in having the help of a gentleman of such undoubted ability. (Applause.)

The PRESIDENT expressed the opinion that if the suggestions that Dr. Hill had made could be carried out, many of the troubles of human beings would be abolished. He invited discussion.

Major PEELE, County Veterinary Inspector for Durham, thanked Dr. Hill for the flattering remarks he had made with regard to himself. He also desired to thank him personally for his attendance and his address. He wished to express his own deep regret at the death of Sir Stewart Stockman. Not only had their profession suffered a severe loss, but a really brilliant man had also been lost to the nation. With regard to the subject of the address, he wished he had had an opportunity of reading it beforehand. In any important matter a paper should be circulated, so that anyone who desired to take part in any discussion on it could have time for consideration. Dr. Hill had covered a tremendous amount of ground and he was quite sure that he had said nothing with which they could not absolutely concur. All he had said would give them a tremendous amount of food for thought; not only so, but it would be valuable information for the general public. One statement Dr. Hill had made, to the effect that human tuberculosis was caused by the bovine bacillus was not, he thought, generally known. It was a matter of great importance and should be recognised by everybody. It had been said that this was not the case. They had now an authoritative statement that it was. He thought they might do a tremendous amount of propaganda work with regard to cleanliness in milk production and notification of disease in cattle. Not only was propaganda work urgently needed amongst milk producers, but also amongst the general public. It was very difficult, it seemed to him, to get people to realise that it would be in their interest to pay a little more for their milk and get it clean. That people would not do this was one of the chief difficulties in getting purer milk, and one of the reasons why in the County of Durham there had not been more applications for licenses to sell graded milk. One licensee who was producing Grade A milk told him he had no difficulty whatever in getting more for his milk, and no difficulty in selling as much as he could produce. That the producer of Grade A milk must have more for it was certain because of the extra expense of producing, the installation of sterilising plant, and the provision of bottles. The reason why there were not more applications for licenses was, as he had already said, because the general public would not pay the price. That propaganda work amongst producers was necessary was absolutely certain. How often did they go into byres and places on farms that were filthy, and where they found cows living under wretched conditions, and being milked surrounded by decomposing material of all sorts, which must be bad for the milk. It was sure to pick up any number of organisms that were likely to do harm to human beings. As to the question of stamping out tuberculosis, they must agree with Dr. Hill that the Tuberculosis Order was doing a small amount in that direction. They were depending upon owners to report any suspected animals but they did not get hold of anything like the number they should. There were some new regulations to come into force on the 1st of July by the enforcement of which he thought many more dangerous animals would be detected than at present. It seemed to him that local authorities should take very many more samples of milk than they did and submit them for bacteriological examination. If more were taken and examined many more

cases of diseased cows would be detected than was at present the case.

In one instance a medical officer of health of a borough reported to him the presence of tuberculosis bacilli in milk. He inspected a herd of thirty animals, and by an ordinary clinical examination he discovered that four were giving infected milk—a very large percentage. That was a proof of the desirability that samples of milk should be taken more frequently and submitted to proper examination.

Another matter which was rather a drawback to the proper administration of the Order was that when a cow was found to be producing tuberculous milk she had to be put under detention for six weeks and no milk was allowed to be used from her, and her owner got no compensation, which was a distinct hardship. He thought an owner should be compensated under such circumstances, but he was not quite sure how it could be done.

In Durham County the Act and the Order were being worked together, and he should like to know whether it would be possible in any way to arrange that where a cow was put under detention the owner should get compensation. From an economic point of view, that seemed to him to be an important matter.

Dr. WHITELEY, Medical Officer of Health for Northumberland, said he believed when the Milk and Dairies Act and the Tuberculosis Order came into operation they were looked upon with little favour, but he considered good work had been done in connection with them since, and in that opinion he was supported by the Ministries of Health and of Agriculture, with which departments he had had some correspondence as to their working. Some draft regulations which were likely to come into operation in July had been referred to. They would mark an era, in the world of county council legislation, of an unprecedented character. Each urban district council and each rural district council would be required to submit to the county council a list of dairymen and cowkeepers in their own immediate neighbourhood. He presumed that, that being so, they was intended for action. At any rate, this was one of the first steps making for consolidation, and would give the county councils greater powers as sanitary authorities. There had in the past been considerable jealousy between veterinary inspectors, medical officers of health, and sanitary inspectors, in some districts, but, so far as their part of the world was concerned, it did not exist. He did not altogether agree with the idea that non-compensation of farmers who were found in possession of infected cattle was the hardship some people thought. He was not at all convinced that compensation was absolutely essential, and if it was granted in respect to one matter the principle would have to be extended, and the amount that would have to be paid out would be appalling. Having introduced the principle, they would have to go on.

Dr. MACRAE had hopes that ultimately tuberculous cattle would be eliminated, and the spread of infection to the human race would cease. A question which had troubled him was as to whether certain classes of cattle were more immune from tuberculosis than others.

Mr. CLEMENT ELPHICK, Veterinary Officer for Northumberland, desired to add his appreciation to that of other speakers of the remarks of Dr. Hill. It was distinctly interesting and pleasing to know that there was a desire for co-operation by medical officers of health with the veterinary profession. He was sure that all veterinary inspectors desired co-operation with medical officers. The veterinary profession had realised for a long time prior to 1914 that something of a very drastic nature had to be done if tuberculosis had to be eliminated, and it was with pleasure that they learnt that the Tuberculosis Order was to be re-introduced in 1925. The Act and the Order were dovetailed and, so far as the County of Northumberland was concerned, he thought they could say that everything had gone off most satisfactorily so far. Unfortunately, he had to agree with Major Peele that not enough milk samples were being submitted for the biological test. As to paying compensation to farmers when a cow was segregated from a herd for six weeks, he thought there was no need for it. A farmer, when an animal was segregated, had to keep her milk from the general bulk, and at the end of six weeks they could tell him whether the cow was giving tuberculous milk or not. In the meantime, the cow was given the best food possible, so that if the sample of milk proved to be infected the animal would have an increased value for beef. Furthermore, the milk from her, provided it was boiled, could be used for feeding pigs and calves. He did not think a farmer was going to be put to any great monetary loss under the circumstances. It had been suggested that veterinary officers might act as propagandists to point out measures that might be taken to prevent the infection of tuberculosis. His idea was that such propaganda should be carried out by educational authorities through the schools. It was no use going into the house of a pitman or a layman and talking to the wife or the good man. Their minds were past impressing, but if children could be taught in plain school language how to keep milk, what milk to drink and what milk to refuse, they would get much better results than if a veterinary officer or a medical officer of health talked to them in technical terms.

In Northumberland, he believed, there were a few more classified dairies than in the County of Durham, and they had met with reacted cows which had been eliminated. Where they went was not known, but eventually some local authority had to deal with them. Such cows might drift into another dairy herd of Grade A and, on being found not to be right, cause trouble and the loss of a lot of money to the buyer. With regard to that matter, he suggested that all milch cows passing through marts should have been subjected to test within fourteen days of being offered for sale and bear a tuberculin test certificate. This would safeguard the interests of other dairymen, who, when they made the purchase, considered they were buying a healthy cow. He agreed with Dr. Hill with

regard to the biological test. It was perfectly obvious to any veterinary inspector who was in touch with his work that the microscopical examination of milk was going to be a hopeless business, and would lead him into a trap in a very short space of time. All milk should be submitted to a biological test. He was in favour of a six weeks' segregation of suspected cows. If disease got into the milk they must think of those who were going to suffer—the children. If they could safeguard them, even if compensation had been paid it would pay in the long run.

Mr. HILL thought there should be a proper inspection of dairies every three or six months. No one knew the desirability of this more than the general practitioner. If a person undertook to supply milk for human consumption he must produce a marketably clean commodity. To carry out his idea, there would have to be more inspectors. It was no good saying that a farmer was liable to a fine if he did not report a suspected cow. He would not, in many cases, report it. If an animal was giving five gallons of milk a day he was not likely to report it until the milk was about gone and he was thinking about compensation. Quarterly examinations of milk-producing herds would rectify that. Co-operation between the medical and the veterinary professions was needed to-day more than ever; in combating the evil they must both pull together.

Mr. H. S. ELPHICK declared that he did not think the cow was ever responsible for scarlet fever. He thought biological tests might be shortened from six weeks to four weeks in very many cases, and agreed that more samples of milk might be submitted for examination. At present, too few were dealt with. He was of opinion that if milk were put in a long glass tumbler and allowed to stand for twelve hours the bacilli would fall to the bottom and the cream and the milk could be consumed with the exception of an inch and a half in the bottom of the glass, without any bacilli being encountered.

Mr. HICKS suggested that in a mixed sample of milk from a dairy the chance of finding tuberculous bacilli was very small. As to bacilli dropping to the bottom of a glass, he had examined cream at the top and had found the tubercle bacilli present there.

Mr. CROUDACE expressed the opinion that there should be a periodical examination of all cattle intended for the supply of human food.

In his reply, Dr. HILL said he appreciated the kindness of the gathering and the eulogistic remarks with regard to him that the speakers had made. Commenting on observations that had been made, Dr. Hill said that in his opinion at least 40 per cent. of the tuberculous joints and glands found in young children were due to the consumption of tubercle-infected milk. He agreed that people should be prepared to pay a higher price for clean milk, and he was sure many would be prepared to do so if they were certain that they were getting pure, clean milk. An additional penny on the price per quart would not be objected to. Competitions in regard to clean milk had shown that a very large number of farmers did supply certified and Grade A milk. The new regulations which would come into force in July would increase the powers of supervision over the hygienic conditions of cowsheds and dairies. He agreed with the opinion that more samples of milk should be taken for biological examination with a view to detecting dirty milk in addition to that containing tubercle bacilli, because dirty milk was liable to produce unhealthy conditions in children. There should be a reorganisation of the food and drugs departments of authorities, and then more attention would be given in regard to taking samples for bacteriological examination. As to the milk from segregated cows, all should be boiled or otherwise sterilised and not limited to that which was used for the feeding of pigs or calves. There was nothing in the Order that prevented the use of such milk, provided it was properly sterilised. Reference had been made to jealousies between medical officers, veterinary inspectors and sanitary inspectors, but he had not met with anything of that kind in the County of Durham. He approved of educational propaganda work amongst the young, but he wanted to get milk improved at its source. The propaganda work in the schools in Durham County was being well done. He agreed that the periodical inspection of dairies was of great importance, and in the new Order some additional powers would be given in that respect. County councils would be given extended powers and, in a county like Durham, it would mean the employment of four additional whole-time qualified inspectors, and it was necessary that there should be independent inspectors if anything really effectual was to be done. He did not think that local sanitary officials of existing local authorities could do much good. There was evidence that in the near future there might be a reorganisation of the public health service with experienced officers guaranteed security of tenure. As to scarlet fever, he agreed that there was no evidence that it had been spread by the cow itself, but people suffering from that and other infectious diseases who had dealings with the cows might be responsible for infection. He had not much faith in the tumbler treatment. He should take away with him pleasurable impressions of that afternoon's meeting.

A hearty vote of thanks was accorded to Dr. Hill for his address.

It was decided, on the proposition of the PRESIDENT, to send a vote of sympathy to Lady Stockman, members standing in silent tribute to Sir Stewart's memory.

The proceedings concluded with a vote of thanks to the President for his services in the chair.

J. R. RIDER, Hon. Secretary.

PERSONAL.

MARRIAGE: SEWELL—LAWRIE.—At Edinburgh, on the 23rd July, 1926, Ernest James Hernon Sewell, M.R.C.V.S., Edinburgh, second son of the late J. W. Sewell, Dublin, to Daisy Jane Lawrie, only daughter of the late Peter Lawrie and Mrs. Lawrie, Edinburgh.

North Midland Division.

DISCUSSION ON THE PRESIDENT'S ADDRESS.

(*Continued from page 623.*)

Mr. MARRISON thanked the Association for copies of the draft Milk and Dairies Order. which had been sent to every member by the Hon. Secretary. He did not agree with owners of cows cutting off the placental membranes. In districts where newly-calved dairy cows were warranted straight, if the placenta or part of it had been retained the purchaser would have a claim against the seller, and if septic metritis set in and the animal died, the result to the seller might be serious.

Major ABSON spoke upon the opposition of owners to the amount of compensation allowed under the Tuberculosis Order, but he always impressed upon them that the Order was not meant to be philanthropic; it was only intended to deal with cattle that were showing clinical evidence of tuberculosis and to safeguard the milk and meat supplies. It was not a measure contemplated to eradicate tuberculosis.

Mr. GREEN also spoke on the question of valuation, and stated that in practice the Tuberculosis Order dealt with clinically-diseased animals only. Clinically-tuberculous animals were really of no value to the owners and such animals soon only became fit for the knacker yard. In the meantime, they were a source of danger to other animals and, if suffering from diseases of the udder, to human beings. If owners were not disposed to let their animals be dealt with under the Tuberculosis Order, either because of non-agreement with the valuation or refusal to accept the compensation likely to be paid them, they could still dispose of their cattle by having them slaughtered and run the risk of loss that might occur. If suspected cattle were sent to a slaughter-house, and after inspection the carcase was passed, the owner would receive the value, whereas if the carcase was condemned, he would only receive the value of the hide less the expenses of slaughtering, etc. Regarding the warranty of freshly-calved cows, he believed that in the North of England it was the custom to give such warranties, but in his district farmers would not give any guarantee, the animal being sold as it stood.

Mr. COLLINSON stated that valuation depended chiefly upon the condition of the animals affected, and mentioned two cases of well-fed animals affected with tuberculosis of the udder with which he had dealt lately, and which he had valued at £30 and £35 respectively. These animals were found to be affected with tuberculosis of the udder within a fortnight after purchase. In each case the disease was found to be advanced and one-fourth of the valuation was paid as compensation.

Major ABSON related some experiences he had had with 27 ewes and lambs, half of which had pustular eruptions on the lips and angles of the mouth. Some were lame and feeding badly. There were no blisters or vesicles on the tongues or feet although some were affected with crusts on the udder and a few with mastitis—in one case part of the udder sloughed away. Upon first inspecting the animals, he thought it might be foot-and-mouth disease, but a careful examination convinced him it was pustular dermatitis.

Mr. MCKINNA gave instances of two cases, and the President stated that he had had a similar experience. He was called in in one case which had been reported to the police as foot-and-mouth disease, but this was not confirmed by an inspector of the Ministry of Agriculture.

Mr. COLLINSON remarked that he had had experience of several such cases and usually found them occurring late in the summer when the grass was dry. He had cured the eruptions with a 2 per cent. formalin solution.

Mr. SAMPSON reported an outbreak of infectious pneumonia in cattle, ten in number. The first animal affected was a heifer standing No. 2 in the cowshed and which had been purchased in a market. The disease spread from her to Nos. 1, 4, 6, 7 and 9; within four days, Nos. 5 and 10 being free for six days. No. 2 soon got well, but No. 4 died in four days, *post-mortem* showing gangrene of the lungs. No. 1 was slaughtered and the carcase passed for food. The others recovered, Nos. 3 and 8 being only slightly affected. He had called Mr. Fletcher in consultation and he had supported the diagnosis.

Mr. TWEED exhibited a specimen of tuberculosis of the uterus and showing one ovary affected with an abscess.

Nominations.—The following were nominated for election as new members:—Messrs. Woodrow, Tweed, Abbott and Hudson, proposed by Mr. HUDSON, senr., and seconded by Mr. SAMPSON.

A vote of thanks to the President terminated an interesting meeting.

J. S. LLOYD, Hon. Secretary.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest or inclusion in these columns.

Diary of Events.

Aug. 27th.—Last day for entries for Jubilee Memorial and Bursary Prize Competition.

Sept. 24th.—Jubilee Memorial and Bursary Prize Examination at R.C.V.S.

LONDON UNIVERSITY.

FINAL LL.B. EXAMINATION.

Amongst the names of successful candidates appeared that of Mr Fred Bullock, Secretary R.C.V.S., who was awarded 2nd Honours.

R.C.V.S. FELLOWSHIP DIPLOMA.

An examination for the Fellowship Diploma was held at 10 Red Lion Square on Monday, July 26th,

when the following candidate was successful :—

George Burnett Purvis, F.R.C.V.S.

Thesis.—"East Coast Fever."

Examiners.—Lt.-Col. F. S. H. Baldrey, C.M.G., F.R.C.V.S., and Dr. A. L. Sheather, D.Sc., M.R.C.V.S.

Sir JOHN MOORE, K.C.M.G., C.B., F.R.C.V.S.
Chairman.

The Royal (Dick) Veterinary College Contingent Officers' Training Corps Annual Camp is being held at Dreghorn Castle grounds. A large number of cadets are in training under the command of Major W. M. Mitchell, M.C. The training consists of ordinary military work and in addition instruction in the duties that would fall to a veterinary officer attached to a division. On Saturday, 24th inst., the members of the contingent were at home to their friends, and a large company spent a pleasant afternoon. On Wednesday, 28th current, the contingent were inspected by Lieutenant Colonel Gamble.

VETERINARY INSPECTION IN THE WEST RIDING.

The West Riding Agricultural Committee, having gone thoroughly into the question of veterinary inspection, and having regard to the present expenditure and the increasing importance of veterinary inspections, are of opinion that the present part-time staff should be replaced by a staff of full-time inspectors, and especially so if the work can be carried out without any increase in cost. The committee therefore recommends to the West Riding County Council, which meets on Wednesday, that a chief veterinary inspector, who shall be a fully qualified veterinary surgeon, be appointed by the County Council at a commencing salary of £750 a year, rising by annual increments of £25 to a maximum of £900, and that such official shall be responsible to the County Council for all the veterinary work of the County Council.

The committee also recommends that four assistant veterinary inspectors be appointed, each at a commencing salary of £400, rising by annual increments of £25 to a maximum of £600.

The cost of the scheme during the first year, including part-time veterinary inspectors for emergency work is estimated at salaries £2,850 and expenses £1,600.—*Yorkshire Observer.*

ARMY VETERINARY SERVICE.

LONDON GAZETTE—WAR OFFICE—TERRITORIAL ARMY.

July 20 : Capt. W. A. Macgregor to be Maj. (July 20) ; Lt. A. McLean to be Capt. (July 19) ; L. Ll. Jones to be Lt. (July 21).

ANIMAL DISEASES RESEARCH.

In connection with the formation of the library in the new institute at Moredun, Gilmerton, Edinburgh, the Animal Diseases Research Association has received the sum of £750, £500 being a donation from Mr. Falconer L. Wallace, of Candacraig and Balcairn, and £250, a grant from the Carnegie United Kingdom Trust. It is made a condition of the latter grant that all except very rare or irreplaceable books will be available to the general public applying through the central library for students in London, Dunfermline or Dublin.

MEAT IMPORTS (INSPECTION).

In the House of Commons recently, Mr. Hurd asked the Minister of Health what steps are being taken to ensure that inspectors responsible for meat imports have veterinary knowledge so that they may more more effectively perform their duties ?

Mr. Chamberlain : I am advised that a veterinary qualification, though desirable, is not essential for the examination of imported meat from the public health point of view.

Mr. Hurd : Is the right hon. gentleman aware that in the opinion of the Ministry of Agriculture, as expressed in this House, these diseased carcases came through the ports because his inspectors of the Ministry of Health had not the necessary veterinary knowledge ?

Mr. Chamberlain : No, sir ; I am not aware of that.

EVIDENCE IN SHEEP SCAB CASES.

Before Justices Avory and Horridge on 20th July, in the King's Bench Divisional Court, it was held that under the Diseases of Animals Act, 1894, the certificate of the veterinary inspector certifying sheep were suffering from scab must be held as conclusive evidence that they were suffering from scab, although independent evidence might prove that they were not.

The Court refused a rule calling upon the Durham Quarter Sessions to bring up a conviction under the Act to be quashed on the ground that the defendant had no knowledge that the sheep were suffering from scab and that the evidence showed they were not.

The application for the rule was made by Mr. Merriman, K.C., on behalf of Mr. Richard Jackson, a farmer, of Barmington, and was for a rule nisi, calling upon the Justices in Quarter Sessions for the County of Durham to bring up to that Court for the purposes of being quashed a conviction against Mr. Jackson for exposing sheep suffering from scab in the market at Barnard Castle on December 28th last.

Counsel said the matter arose under the Sheeps Scab Order issued by the Board of Agriculture under the Diseases of Animals Act, 1894, which provided that any person exposing sheep suffering from scab should be liable to conviction and fine, and that the certificate of the veterinary inspector under the Act should be held to be conclusive proof that the animals were suffering from scab. In this case the veterinary inspector certified that one of four sheep penned at Barnard Castle by Mr. Jackson was suffering from scab. When the case came before the Magistrates, Mr. Jackson called three independent veterinary surgeons, who had examined the sheep, and who certified that they were not suffering from scab, and there was a report from the Veterinary College to the same effect.

Upon this, the Magistrates dismissed the summons. The authorities then appealed to the Durham Quarter Sessions with the view solely of maintaining the principle that the certificate, as stated in the Act, was final and conclusive evidence that the sheep were suffering from scab. The Magistrates in Quarter Sessions held that this was so, although, said counsel, the evidence was overwhelming that they were not suffering from scab. The Justices in Quarter Sessions held that they were bound by the Act, and fined Mr. Jackson £1.

Counsel submitted that there were two parts to the Act, and that a person summoned must be allowed to exonerate himself, and to show that he had no knowledge that the sheep had scab. Although the certificate of the inspector was conclusive according to the terms of the Act, in a case like the present, where if anything was clear it was the fact that they had not scab, there must be a right given the defendant to exonerate himself, otherwise a certificate might be given by an imbecile and the defendant would have no remedy.

In refusing the application, Mr. Justice Avory said the remedy was to get the Act of Parliament altered. It undoubtedly created hardship, but the Court could not grant the rule.—*Yorkshire Post.*

National Veterinary Medical Association of Great Britain and Ireland.

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